# Oak Hill Elementary Science Fair

## Student Packet

# 2009 - 2010

# SCIENCE FAIR TIMELINE

| | | |
|---|---|---|
| **Week of October 12th** | | Teachers begin discussing the requirements of the Scientific method for the Science Fair |
| **October 15th** | **(6:30-7:30 p.m.)** | Parent Orientation on Scientific Method by Wayne Branagh, PhD |
| **November 16th** | | Science Fair Project MUST BE TURNED in to class<br>Science Fair Project presentation begins in the Classroom |
| **November 18th** | | Science Fair set up in the Cafeteria for judging |
| **November 19th** | **(after 10 a.m.)** | Students begin viewing, OPEN to PUBLIC as well |
| | **(5:30-7:00 p.m.)** | Public viewing |
| | **(6:30 p.m.)** | AWARDS PRESENTATION |
| **November 20th** | **(8:00-9:30 a.m.)** | Viewing |
| | **(9:30-10:00 a.m.)** | Projects taken down from cafeteria |
| | **(10:00- 2:30)** | Projects taken down from gym |
| **February 26 - 27th** | | Regional Science Fair for all 1st place winners |

## 2009 – 2010

Oak Hill Elementary

Science Fair Interest Form

**For Grades PK, K, 1, 2, 3, and 5**

**PARTICIPATION IN SCIENCE FAIR IS MANDATORY FOR 4TH GRADE**

**Name:** _____

**Grade:** _____ **Teacher:** _____

Yes, we are interested in the Science Fair. Please send home the information packet.

Student Signature: _____ Parent Signature: _____

October 9, 2009

Oak Hill Families,

The Enrichment Committee is happy to announce this year's Oak Hill Elementary Science Fair. This year's activities will begin with a presentation of the Scientific Method on Thursday, October 15th at 6:30 p.m. in the cafeteria. Oak Hill PTA will sell the project display boards after the presentation.

All Science Fair Projects are due on November 16th, 2009. The displays will be set up at school for judging on November 18th.

- **PARTICIPATION in the Oak Hill Elementary Science Fair is MANDATORY for ALL 4TH GRADE STUDENTS.**
- **All 4th and 5th grade students are REQUIRED to carry out an EXPERIMENT in order to participate in the Science Fair**
- **2nd and 3rd grade students may do a model/demonstration or an experiment.**
- **PK-1st grade students may do an experiment, model, or collection**

The top 20 entries in the school will advance to the Austin Energy Regional Science Fair, which will be held at the Palmer Event Center on February 26th-27th, 2010. This is a competition between the best Science Fair entries across several schools and school districts in the Central Texas area. Please note that the entries from children in Pre-K and Kindergarten will NOT ADVANCE to the Austin Energy Regional Science Fair in February.

General information on the timeline for this year's Science Fair is attached. Interested students in grades PK, K, 1, 2, 3, and 5 should fill out and return the Science Fair Interest Form to their Teacher as soon as possible. Student/Parent information packets will then be sent home.

Sincerely,

The Enrichment Committee

# Rules

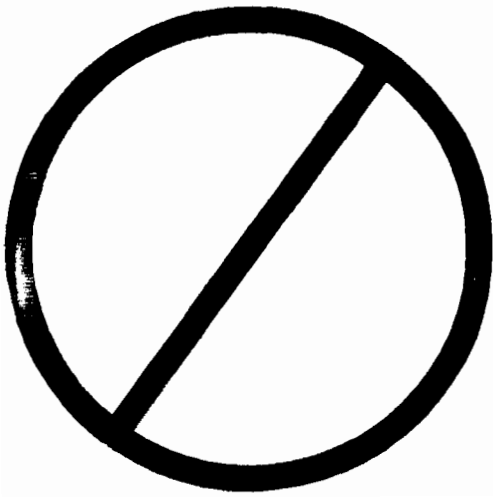
**No student will be allowed to conduct or design a science fair project that involves growing bacteria or mold at home.**

**Size of Display** – No more than 48 inches (122 cm) wide, 36 inches (122 cm) high, and 30 inches (76 cm) deep. **NO HEADER PLEASE.**

**Organisms** – No living creatures including animals, plants, and microbes will be displayed.

**Parts** – No human animal parts may be displayed. (Teeth, hair, nails, dried animal bones, histological sections or wet mount slides are acceptable).

**Specimens** – No taxidermy or parts and no preserved animals, vertebrates or invertebrates, including embryos will be displayed. No dry plant materials may be displayed.



**Sensitive Photographs**– No visual presentations of surgical techniques, dissections, necropsies, and/or laboratory techniques depicting vertebrate animals or humans in other than normal conditions will be displayed.

**Soil/Waste** – No soil or waste materials or samples may be displayed

**Chemicals** – No chemicals of any kind including water may be displayed

**Food** – No human or animal food may be displayed

**Weapons and other hazards** – Prohibited projects include those that discharge firearms, discharge air pressure canister devices, deal with radioactive materials, and/or any activity that presents a danger to the student.

**Sharp Items** – No syringes, needles, pipettes, and or anything sharp may be displayed.

**Controlled Substances** – No poisons, drugs, controlled substances, hazardous substances or devices, may be displayed. (i.e. firearms, weapons, ammunitions, reloading devices).

**Dry Ice** – No dry ice or sublimating solids may be displayed. (i.e. solids which vaporize into gas without passing into the liquid phase)

**Fire** – No flames or highly flammable materials may be displayed.

**Tanks** – No tanks that have contained combustible liquids or gases including propane and butane may be displayed.

**Machinery** – No unshielded belts, pulleys, chains, or moving parts that pose hazards may be displayed.

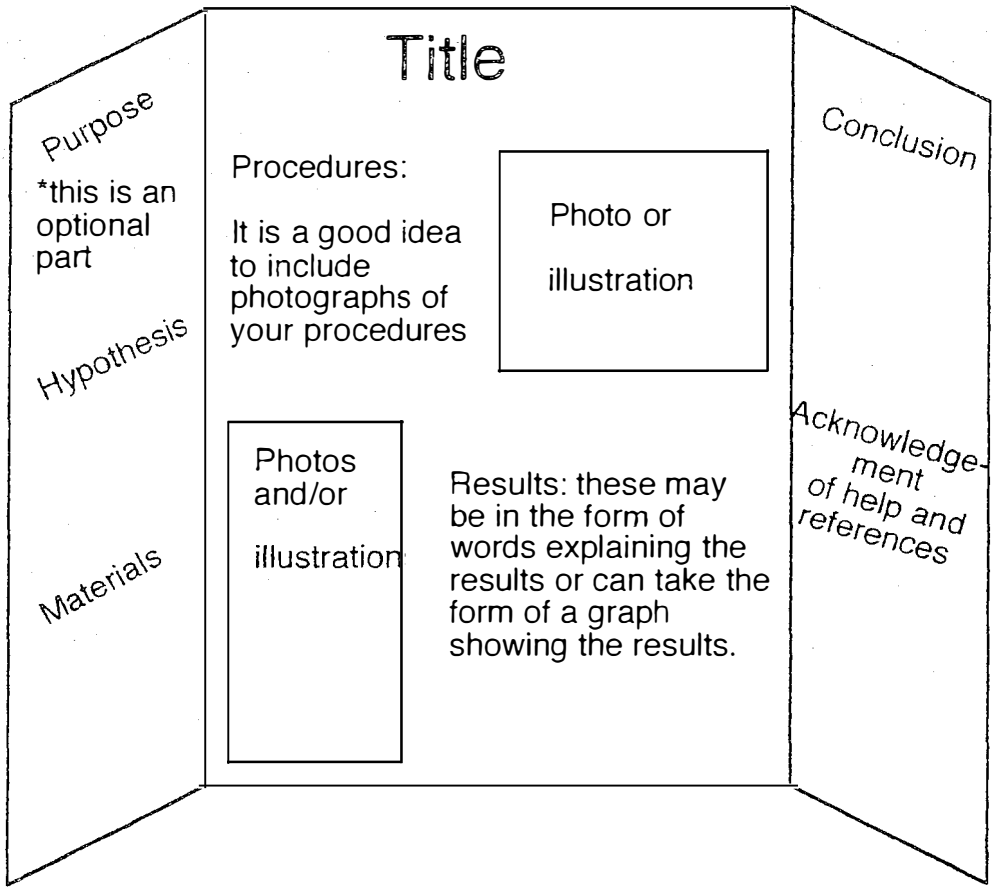
**Lasers** – No lasers which do not meet ISEF standards (Class II, student operated with warning sign: "LASER RADIATION: Do not stare into beam", protective housing, and power disconnect). No class III or IV lasers may be operated.

**Heat** – No temperatures above 100F unless adequately insulated may be used.

**Electricity** – All ISEF standards must be observed. No unshielded high voltage equipment, large vacuum tubes, or ray-generating devices; No bare wires or exposed knife switches used in circuits of 12 volts or more may be displayed.

**Embellishments** – No awards, medals, business cards, flags, etc. No personal information may be displayed (i.e. personal photographs, accomplishments, acknowledgements, addresses, phone or fax numbers). A one-page narrative may be handed out to judges.

# The Science Fair Experiment




Science Fair projects should be put on a tri-fold board available at many office supply stor or ordering through the school via Showboards, Inc. The above illustration is an example o how a science fair project should be done. This is, however, only an example and studen may certainly be creative in how they present their experiment. They could include items used during the experiment either attached to theboard or placed in front of the board for others to examine. Projects should be of a size in which they would stand on a student's desk.

For safety's sake, certain items are banned from appearing in or on a project. No glass, liquids, live animals, open food items, bacterial/ mold cultures, or dirt. Also, do not use an hazardous materials such as open flames, unprotected light bulbs, or dangerous chemical If these materials are used, other documentation should be used, such as photographs

# Project Content

A science fair project has three parts: a report, a free-standing display board, and a sample of the work that you have done.

**Choosing a Topic**
A good topic has a problem that can be answered only by experimenting. If a topic is broad or general, too many factors (variables) will exist that cannot be controlled, and you will find it difficult to produce reliable results.

A list of what each project should have is followed by a list of where each part should be placed:

**Title**
A project needs a title. It lets people know what you have worked on. The title should be in the form of a statement, unless you use the problem statement as your title. Then it should be in the form of a question.

Poor Title: Soap Powder (does not say enough)
Better General Title: Cleaning Power of Soap Powder
Problem Statement as Title: Which Soap Powder Works Best in Removing Ketchup Stains?

**Problem Statement / Purpose**
The problem statement is always written in the form of a question, even if it is used as the title. The question tells people what you are trying to find out.

Poor Problem Statement: How does Soap Work?
Better Problem Statement: Which Soap Powder Works Best in Removing Ketchup Stains?

**Hypothesis**
A hypothesis is your prediction of the final result. It is typically an educated guess based on facts that are known before doing the experiment. For example, you might hypothesize that Soap X will work best because it is the most expensive.

**Experiment**

This section includes the variables, list of materials, experimental procedure, and data.

*Variables*: These are all factors that affect your investigation. A manipulated variable is what you change on purpose to see its effect. A responding variable is what you changed or did not change in response to what you have manipulated. This what you are observing and/or measuring in order to get your results.

*Materials*: This is a list of items you used in the experiment

*Procedure*: These describes the steps you took in carrying out the experiment.

*Data*: What did you see ? Record all your observations in a log. For example, if you were doing the soap experiment, you should tell how long it took for the different soaps to work, or which soap worked best at removing the stain. If you used quantitative data, be exact with your numbers or counts (use metric units). If you use qualitative data, describe what you observed in words like hot or cold, bright and dim, or fast and slow. Use the same words, when you talk about the same conditions. Include graphs, tables, or pictures to display your data.

**Results**

Interpret the data. Think about what you are learning from the data. State the findings of the experiment based upon the data you observed and analyzed.

Example: Soap X worked in 40 minutes while Soap Y took 20 minutes.

**Conclusion**

Your conclusion should begin with a statement on whether or not the results supported the hypothesis. This statement should be followed by description of the specific results that either supported or did not support the hypothesis. Include a description of the problems that might have affected the results and why. Also, include any new discoveries you have made beyond what were planned in the original problem definition. Add any new questions that may lead to new experiments.

Example: The experimental results do not support my hypothesis that the most expensive soap (Soap X) would work the best. Instead, the results show that Soap Y works twice as fast as Soap X for cleaning ketchup stains. The hardness of the water may have affected the results because . . .

# Oak Hill Elementary Science Fair

Student's Name_____ Grade Level_____

Project Title_____

Project Number_____ Category A B

*Directions: Each Project is evaluated in only one of the following three categories:*

- ☐ *(A) Experiment*
- ☐ *(B) Demonstration/Model*

| Final Score (Average of 3 totals) | |
|---|---|
| For official use only | |

*Rate how well the student addresses each criteria. The point value for each criteria varies, ranging from 1 point to 5 points.*
*Starting with Judge #1, each judge assigns point values for each criteria in the appropriate column, calculates a total score, and folds the page to cover the ratings.*

| | Judge #3 | Judge #2 | Judge #1 |
|---|---|---|---|
| **A Experiment** | | | |
| *Criteria-How well does this project address each item?* | | | |
| ◦Title, question, or problem statement | ____/2 | ____/2 | ____/2 |
| ◦Hypothesis | ____/2 | ____/2 | ____/2 |
| ◦Materials list | ____/2 | ____/2 | ____/2 |
| ◦Materials displayed and clearly labeled where possible | ____/3 | ____/3 | ____/3 |
| ◦Experimental procedure | ____/5 | ____/5 | ____/5 |
| ◦Results: uses tables and graphs of data | ____/4 | ____/4 | ____/4 |
| Conclusion including acknowledments and references | ____/5 | ____/5 | ____/5 |
| *Ability to communicate thorough understanding of subject | ____/5 | ____/5 | ____/5 |
| **Total** | ____/28 | ____/28 | ____/28 |
| | | | |
| **B. Demonstration or Model** | | | |
| *Criteria-How well does this project address each item?* | | | |
| ◦Title, question, or problem statement | ____/1 | ____/1 | ____/1 |
| ◦Report: background information & references on the demo./model | ____/4 | ____/4 | ____/4 |
| ◦Demonstration or model displayed and clearly labeled | ____/5 | ____/5 | ____/5 |
| ◦Procedure, results, & acknowledgment of help | ____/5 | ____/5 | ____/5 |
| ◦Significance (Why is it important? What have you learned?) | ____/5 | ____/5 | ____/5 |
| *Ability to communicate thorough understanding of subject | ____/5 | ____/5 | ____/5 |
| **Total** | ____/25 | ____/25 | ____/25 |

Judge's comments:

_____

_____

_____

_____

_____

_____

# DISPLAY CHECKLIST

The student should plan his/her display from the beginning of the project. Some of the items that should be on display are:

1. Title of the exhibit (could be a header on top of the display board)
2. Question or problem statement
3. Hypothesis
4. Materials and/or Equipment list (could include photographs, drawings)
5. Experimental procedure
6. Results (could include data tables, graphs, photographs, and visual observations.)
7. Entire data logbook (or photocopies of selected pages); This is an OPTIONAL item.
8. Conclusions (student's interpretation of the experimental results)
9. Acknowledgements
10. References

# Internet

**Helpful Websites**

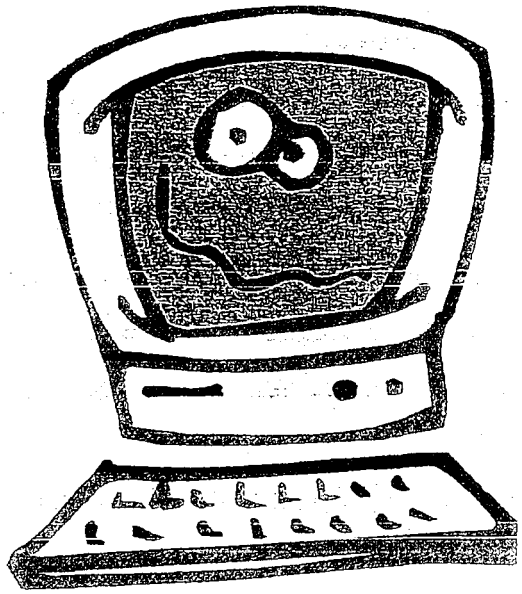
Http://ipl.org/youth/projectguide

http://youth.net/nrsc/sci/sci.index.html

http://www.chem4kids.com

http://isd77.k12.mn.us/resources/cf/steps.html

* http://www.sciserv.org/isef



**Successful Science Fair Projects**

http://faculty.washington.edu/shudler/fair.html

**Fair Resources**

http://www.ipl.org/youth/projectguide

Science Fair Resource Guide

http://www.madsci.org/libs/areas/reagents.html

Finding Scientific Reagents

http://www.scifair.org

The Ultimate Science Fair Resource

http://www.lib.lsu.edu/sci/chem/internet/science_fairs.html

http://www.usc.edu/cssf/resources/

http://www.educationplanet.com/science fair.html

http://www.chipublib.org/008subject/009scitech/scifair.html

http://teams.lacoe.edu/documentation/places/science/science fair.html

http://www.exploratorium.edu/ls/pathfinders/scifairs/

http://www.us.net/mccpta/science.html

http://cusef.byu.edu/Science%20Fair%20Resources/resources.htm

http://www.saludak-12.org/scifair.htm

http://www.hamiltonschools.org/davies/sciencefairrefs.htm

http://www.saluda.lib.sc.us/science .html

http://sciencepage.org/scifair.htm

http://www.wheaton.lib.il.us/library/scifair.html

**Idea Generation**

http://askeric.org/Projects/Newton

Educational Information

http://school.discovery.com/sciencefaircentral

Science Fair Central

**Project Ideas**

http://users.massed.net/~tedrowan/primer.html

Helps Students Develop Science Fair Projects

http://sciencefairproject.virtualave.net/

http://www.cmste.uregina.ca/scifair.html

http://www.sciencebob.com/lab/sciencefair/resources.html

http://www.yahooligans.com/Science_and_Nature/Experiments_and_Activities/Science_fairs/

http://dir.yahoo.com/Science/Education/k_12/Fairs_and_competition/Projects_and_Ideas

**Science Fairs**

http://sciencefairproject.virtualave.net

Science Fair Homepage

http://istf.ucf.edu

Internet Science and Technology Fair

http://www.stemnet.nf.ca/sciencefairs

Another Science Fair Homepage

http://www.drexel.edu/dvsf/

http://www.umdnj.edu/camlbweb/scifair.html

http://www.west.net/~vcsf/index.htm

http://www.gnsef.org/resources.html

**Presentation and Evaluation**

http://school.discovery.com/sciencefaircentral/scifairstudio/handbook/presandeval.html

Science Fair Studio

**Science Fair Judging Sheet**

http://sciencefairproject.virtualave.net/judging_sheet.html

**Others**

http://www.sciencedaily.com

http://www.enn.com

http://www.newscientist.com

http://familyeducation.com/article/0,1120,1-3600,00.html

http://www.pangloss.ca/mentors/sciencefairs.html

http://www.Eskimo.com/~billb/amasci.html

http://www.ontariosciencecenter.ca/kids/cool_stuff/fairlinks.asp

http://homeworkspot.com/sciencefair/